



AR9002WB-2NG

2-stream 11n and Bluetooth®
Half-Mini Card design



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Qualcomm® Wi-Fi with Bluetooth

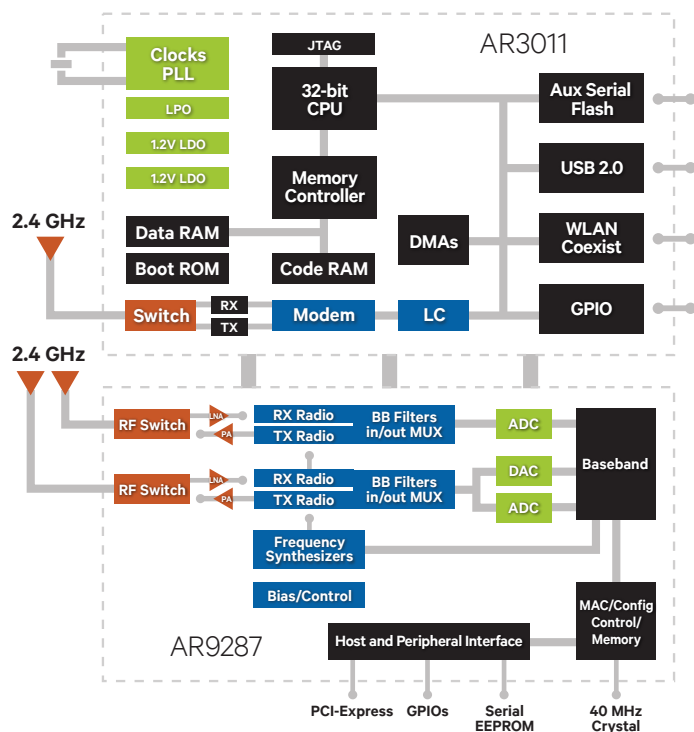
Delivering best-in-class
Wi-Fi and Bluetooth solutions
with superior wireless coexistence.



Solution Highlights

- Combines AR9287 single-chip 2-stream 11n and AR3011 single-chip Bluetooth solutions on a single card
- Qualcomm Universal Wireless Cooperation™ support for maximum coexistence performance
- Simultaneous WLAN and BT operation
- Seamless end user experience from standalone solutions
- Compact WLAN and BT solution for small PC designs
- Optimal low cost RBOM
- Supports up to 300 Mbps for WLAN portion
- Bluetooth 2.1 + EDR and Bluetooth 3.0 + HS
- BQB and Wi-Fi Alliance certified

AR9002WB-2NG System Architecture



Technology Overview

WLAN is ubiquitous in notebooks and netbooks, a standard feature especially in portable computing platforms, meeting user demand for mobile wireless connectivity. Many computers are shipping with 11n technology, and a large proportion of enterprise-class notebooks now feature Atheros' popular 2-stream 11n solution. Bluetooth, the most popular personal area network technology, is contained in nearly half of netbooks shipping today, enabling wireless connectivity with peripherals such as keyboards, mice and headsets. As a result, many portable computing platforms contain both WLAN and Bluetooth capabilities. However, these two wireless technologies are commonly located on separate cards within the same system, posing size and cost design challenges.

Product Overview

Industry's first 2-stream 11n and Bluetooth design on Half-Mini Card

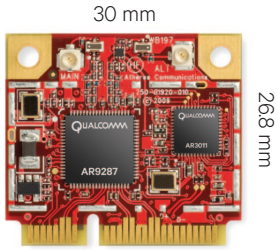
With the growing demand for both WLAN and Bluetooth in portable computers, Atheros has developed a 2-stream 11n plus Bluetooth combo solution on a Half-Mini Card. The AR9002WB-2NG delivers the 11n performance of Qualcomm's AR9287, the popular single-chip 11n 2-stream PCIe solution featured in enterprise-class notebooks. This market-leading 11n solution combines with Qualcomm's single chip Bluetooth 2.1 + EDR and 3.0 + HS solution optimized for computing devices.

Qualcomm Universal Wireless Cooperation™

Qualcomm's new WLAN and Bluetooth combo solution goes beyond coexistence to enable cooperation between WLAN and Bluetooth technologies co-located on computing platforms. To support this new level of radio coexistence, Qualcomm has engineered a suite of advanced wireless techniques to deliver Atheros Universal Wireless Cooperation, consisting of channel protection and timesharing mechanisms and Atheros' proprietary WLAN/Bluetooth Coexistence Agent.™

Single-board efficiency

By combining WLAN and Bluetooth on a single board, the AR9002WB-2NG offers a 20% RBOM reduction vs. separate WLAN and Bluetooth boards. The single board design enables sharing of elements such as the PCB and antennas to reduce duplication. The AR9287 integrates the MAC/baseband and radio transceiver, as well as the power amplifier, low noise amplifiers and antenna switch – the entire RF front end.



WB197

WB197 Reference Design Highlights

- PCI Express Half-Mini Card 1.1 specification compliant
- PCI Express 1.1 for WLAN, USB 2.0 for Bluetooth
- Worldwide regulatory compliant (country list available on request)
- Single worldwide SKU
- Driver support on Win 7, Windows Vista, Windows XP, and Linux

AR9287

Single-Chip 802.11n-Compatible PCI Express CMOS MAC/Baseband/Radio

- Highly compact, small footprint package
- Integrated power amplifier and low noise amplifier for best total solution cost
- PCI Express Based Specification 1.1 compliant
- Low power sleep modes supported

AR3011

Single-Chip Bluetooth 2.1 + EDR and 3.0 + HS

- Designed for computing applications
- Integrated Radio and Baseband on a single chip
- 2.4 GHz Class 2 Bluetooth Radio
- Supports both EDR of 2 Mbps ($\pi/4$ -DQPSK) and 3 Mbps (8-DPSK)
- -87 dBm radio sensitivity
- +4 dBm maximum output power
- Eliminates the need for Balun and matching network

AR9002WB-2NG Specifications

AR9287 Specification

Frequency Band	2.4 GHz
Network Standard	802.11b, 802.11g, 802.11n
Modulation Modes	OFDM with BPSK, QPSK, 16 QAM, 64 QAM; DBPSK, DQPSK, CCK
FEC Coding Rate	1/2, 2/3, 3/4, 5/6
Hardware Security	AES, TKIP, WEP
Quality of Service	802.11e
Media Access Technique	CSMA/CA
Communication Interface	PCI Express
Peripheral Interface	GPIOs, LEDs
Supported Data Rates	
IEEE 802.11b	1 to 11 Mbps
IEEE 802.11g	6 to 54 Mbps
IEEE 802.11n 2-stream	6.5 to 300 Mbps
Operating Voltage	1.2V +/-5%, 3.3V +/-10%
Package Dimensions	8 mm x 8 mm
Package	68-pin LPCC

AR3011 Specifications

Frequency Band	2.4 GHz
Bluetooth Standard	BT 3.0 + HS/BT 2.1 + EDR
Modulation Technology	G-FSK, $\pi/4$ -DQPSK, 8-DPSK
Communications Interface	USB 2.0
Peripheral Interface	GPIOs
Auxiliary Memory Interface	Serial Flash
Package Dimensions	6 mm x 6mm QFN
Power Supply	Two integrated 1.2v regulators

Qualcomm Atheros is a wholly owned subsidiary of Qualcomm Technologies, Inc. and a leading provider of wireless and wired technologies for the mobile, networking, computing and consumer electronics markets. We're focused on inventing technologies that connect and empower people in ways that are elegant and accessible to all.

Our broad connectivity portfolio allows us to offer our global customer base high-performance, end-to-end solutions, featuring Wi-Fi®, GPS, Bluetooth®, FM, Ethernet, HomePlug™ Powerline and PON technologies. By leveraging substantial expertise in RF, signal processing, software and networking we can deliver highly-integrated, low-power, system-level solutions that enable developers to create high-performance, differentiated products.

For more information, please visit us online @ qca.qualcomm.com

